SYSTEMIC APPROACH TO THE WASTE-FREE PRODUCTION

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The issue of the environment has become central, which is where it belongs, in the vicissitudes of human life. It certainly was not discovered yesterday, but the pressure of humans on natural resources in the last half-century has become more intensive and widespread than ever.

In the past 50 years humans have changed ecosystems more rapidly and extensively than in any other comparable period of human history, mainly to meet the growing demand for food, water, timber, fiber and fuel.

Water, air and earth, indispensable resources for human survival come, until recently seemed to have no value and were exploited in the belief of unlimited availability.

These three elements, in classic economic theory, were considered resources available to humanity at no cost. However, the accumulation of environmental problems has challenged this theory: the bad smell of air and rivers, urban smog and the excessive growth of algae have demonstrated that clean air and water must be valued. Currently these resources cannot be considered free for the taking.

Alternative production methods are possible when the proper value is given to materials which are currently viewed as merely scraps of production rather than resources that can be made available for other types of processing. We need to retrieve the cultural and practical capability to delineate and program the flow of material from one system to another in a continuous metabolization that reduces ecological impact and generates a notable economic flow; currently the scraps of production processes are only an economic and environmental cost. To understand the complexity of a system made up of relations between different beings and the continuous evolving flow of matter, it's essential to turn to Nature. In Nature there is no such thing as waste and even surpluses are metabolized by the system itself.

If these conditions, which are fundamental for a living system, are adopted in production, they will favor the development of a zero-emissions production precisely because the waste (output) of one process is used as a resource (input) for another production process. This leads us to a change in perspective that goes in the direction of thinking by connections. Therefore the production process will no longer be seen as a sequence of actions independent of each other but will be considered in its entirety.

The above mentioned concept is the first of five principles of Systemic Design, which are:

1. The output of a system becomes the input for another one.
2. Self-producing systems sustain themselves by reproducing automatically, thus allowing them to define their own paths of actions, and jointly co-evolve.

3. The local context is fundamental, because it values local resources (e.g. human, culture, materials) and helps resolve local problem by creating new opportunities.

4. The systemic approach is based on relationships: each one contributes to the system and the relationships can be within the system or outside of it.

5. Man connected to own environmental, social, cultural and ethical context.

Until today people always thought of the production process as a sequence of actions independent of each other for the purpose of producing goods. However, unfortunately, this model creates a substantial amount of waste.

Society currently uses a linear approach to handle situations, analyzes cause-event phenomena and solves technical problems. Its studies spot strategies…but this is not innovative. We need to make an effort to change our usual way of looking at problems and confront them from different angles. In an ever more complex world like ours, it becomes necessary to give up the exclusive focus on the product and the product lifecycle and extend our gaze, and therefore our competence, to the entirety of relationships generated by the production process.

We must start with the realization that organic waste thrown away and not valued contains large quantities of precious resources for other manufacturing processes. Systemic methodology leads industries to organize themselves into local sustainable groups in such a way that the waste products of one can be sold as a resource to another and benefit both of them.

Precisely like a local ecosystem where the representatives of the various species live in close contact, interacting according to complex dynamics, in the proposed productive system, which embraces the systemic concept, new connections link different production enterprises, new flows of material are generated and the energy and resources are put in circulation thanks to a multifaceted web of interdependencies.

The greatest innovation offered by this approach consists of raising the awareness of producers that the problem of waste can be solved by activating complex relations in which the outputs of one productive process connect the nodes, which are local companies, of a network in which know-how, well-being, material and energy transit.

When the outputs are considered raw materials filled with potential, it allows the so-called scraps to become materials worthy of proper, rational and targeted management for being reused as raw materials for other production processes. The systemic approach produced higher economic profits and better quality products abounding in vital social and ethical values because attentive to human and animal health as well as respect for the environment.

Today it is precisely environmental degradation, the lack of resources and the myth of unlimited development that have forced us to think about and reconsider the role of humans in society. We do not play the role of director but rather we are part of an interconnected and interdependent system. Being aware of this means thinking and acting to create a sustainable future in which we can meet the needs of everyone without jeopardizing the needs of generations to come, not only in

terms of material resources but also in terms of cultural diversity and growth. This requires a radical change in our perception of reality, starting with a redefinition of the basic values shared by society.

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